Institute for Advanced Simulation
Jülich Supercomputing Centre

IAS Seminar

Topic: Interactive Multi-Agent and Crowd Simulation

Speaker: Prof. Dinesh Manocha, Department of Computer Science
University of North Carolina at Chapel Hill, USA

Contents: Modeling of multiple agents and crowd-like behaviors has been widely studied in virtual reality, robotics, computer animation, psychology, social sciences, and civil and traffic engineering. Realistic visual simulation of many avatars requires modeling of group behaviors, pedestrian dynamics, motion synthesis, and graphical rendering. In this talk, we give an overview of the work related to multi-agent and crowd simulation at UNC Chapel Hill. This includes new algorithms for local collision avoidance based on reciprocal velocity obstacles, automatic generation of emerging behaviors using composite agents or proxies, directing crowd simulation using navigation functions, data-driven crowd simulation, and new parallel algorithms that can exploit the capabilities of upcoming multi-core and many-core processors and can handle up to 200K agents at interactive rates. Furthermore, they can be combined with personality models from psychology to simulate heterogeneous crowds. We also demonstrate their application to evacuation planning, urban simulations, traffic engineering and simulating large crowds at social or religious gatherings. This technology has been used in some leading games such as Warhammer 40,000 and also simulate the movement of pilgrims performing Tawaf in Mecca.

Time: Wednesday, 9 November 2011, 10:00

Venue: Jülich Supercomputing Centre, Rotunda, building 16.4, room 301

Anyone interested is cordially invited to participate in this seminar.

sgd Dr. Sabine Höfler-Thierfeldt